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Nota di contenuto	Frontmatter -- List of contributing authors -- About the editor -- Preface -- Contents -- 1. Catalysis in Multifunctional Reactors / Mahajani, Sanjay M. / Saha, Basudeb -- 2. Biocatalytic membrane reactors (BMR) / Vladisavljevi, Goran T. -- 3. Metallic nanoparticles made in flow and their catalytic applications in micro-flow reactors for organic synthesis / Shahbazali, Elnaz / Hessel, Volker / Noël, Timothy / Wang, Qi -- 4. Application of multi-objective optimization in the design and operation of industrial catalytic reactors and processes / Ivanov, Stanislav Y. / Ray, Ajay K. -- 5. Design of catalytic micro trickle bed reactors / Degirmenci, Volkan / Rebrov, Evgeny V. -- 6. Three-phase catalytic reactors for hydrogenation and oxidation reactions / Wood, Joseph -- 7. Design and modeling of laboratory scale three-phase fixed bed reactors / Kilpiö, Teuvo / Russo, Vincenzo / Eränen, Kari / Salmi, Tapio -- Index
Sommario/riassunto	Catalytic Reactors presents several key aspects of reactor design in Chemical and Process Engineering. Starting with the fundamental science across a broad interdisciplinary field, this graduate level

textbook offers a concise overview on reactor and process design for students, scientists and practitioners new to the field. This book aims to collate into a comprehensive and well-informed work of leading researchers from north America, western Europe and south-east Asia. The editor and international experts discuss state-of-the-art applications of multifunctional reactors, biocatalytic membrane reactors, micro-flow reactors, industrial catalytic reactors, micro trickle bed reactors and multiphase catalytic reactors. The use of catalytic reactor technology is essential for the economic viability of the chemical manufacturing industry. The importance of Chemical and Process Engineering and efficient design of reactors are another focus of the book. Especially the combination of advantages from both catalysis and chemical reaction technology for optimization and intensification as essential factors in the future development of reactors and processes are discussed. Furthermore, options that can drastically influence reaction processes, e.g. choice of catalysts, alternative reaction pathways, mass and heat transfer effects, flow regimes and inherent design of catalytic reactors are reviewed in detail. Focuses on the state-of-the-art applications of catalytic reactors and optimization in the design and operation of industrial catalytic reactors Insights into transfer of knowledge from laboratory science to industry For students and researchers in Chemical and Mechanical Engineering, Chemistry, Industrial Catalysis and practising Engineers